



Legion: An extensible lightweight web framework for easy BOINC task submission, monitoring and result retrieval using web services

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Outline

- Who are we?
- Legion Framework
- Architecture
- Applications
- Conclusions and future work

Who are we?



Who are we?

- Our Office manages all the computer commons.
- University-wide BOINC Campus Grid working with: 500 PCs.
- Main users: Researchers working on High Energy Physics.

Legion Framework



Legion Framework

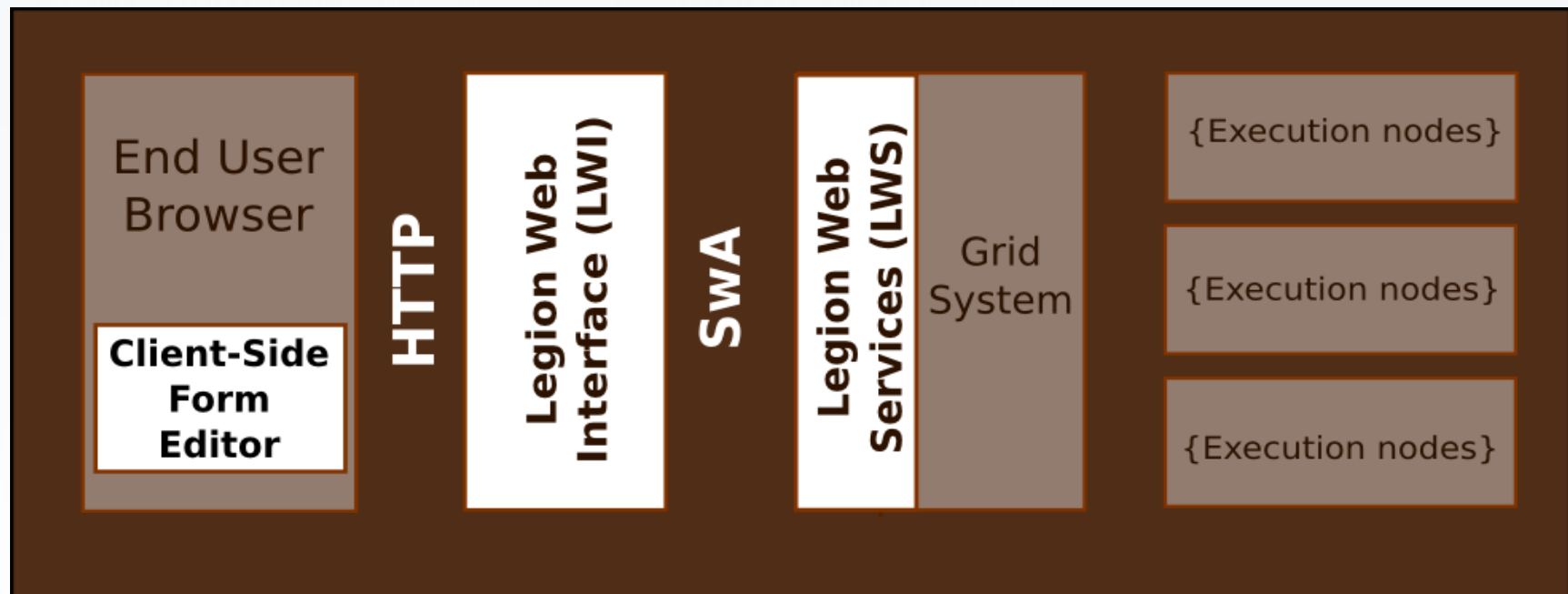
- Set of tools that ease the access to BOINC.
- Portal where researchers actually send the parameter for jobs (bag-of-Tasks) via Web.
- Remote task submission via command line.
- We have a proposal for centralizing BOINC Server Management.

Architecture



Architecture

- Service Oriented Architecture.
- Allows multiple interfaces (Web, CLI) / multiple back-ends (BOINC, Other DGs).





Legion Web Interface

- Portal where researchers actually send the parameter for their jobs (bag-of-Tasks) via Web.
- Projects are created through a Wizard.
- Task submission forms are designed graphically.
- User management features.
- Allows collaboration Eg. Task sharing between project users.



Legion Web Services I

- Inserted on top of a Grid Management System.
- Allows bag-of-Tasks to be created on the system and to monitor those.
- It exposes SOAP web services.
- Enables Remote Job Submission and monitoring.

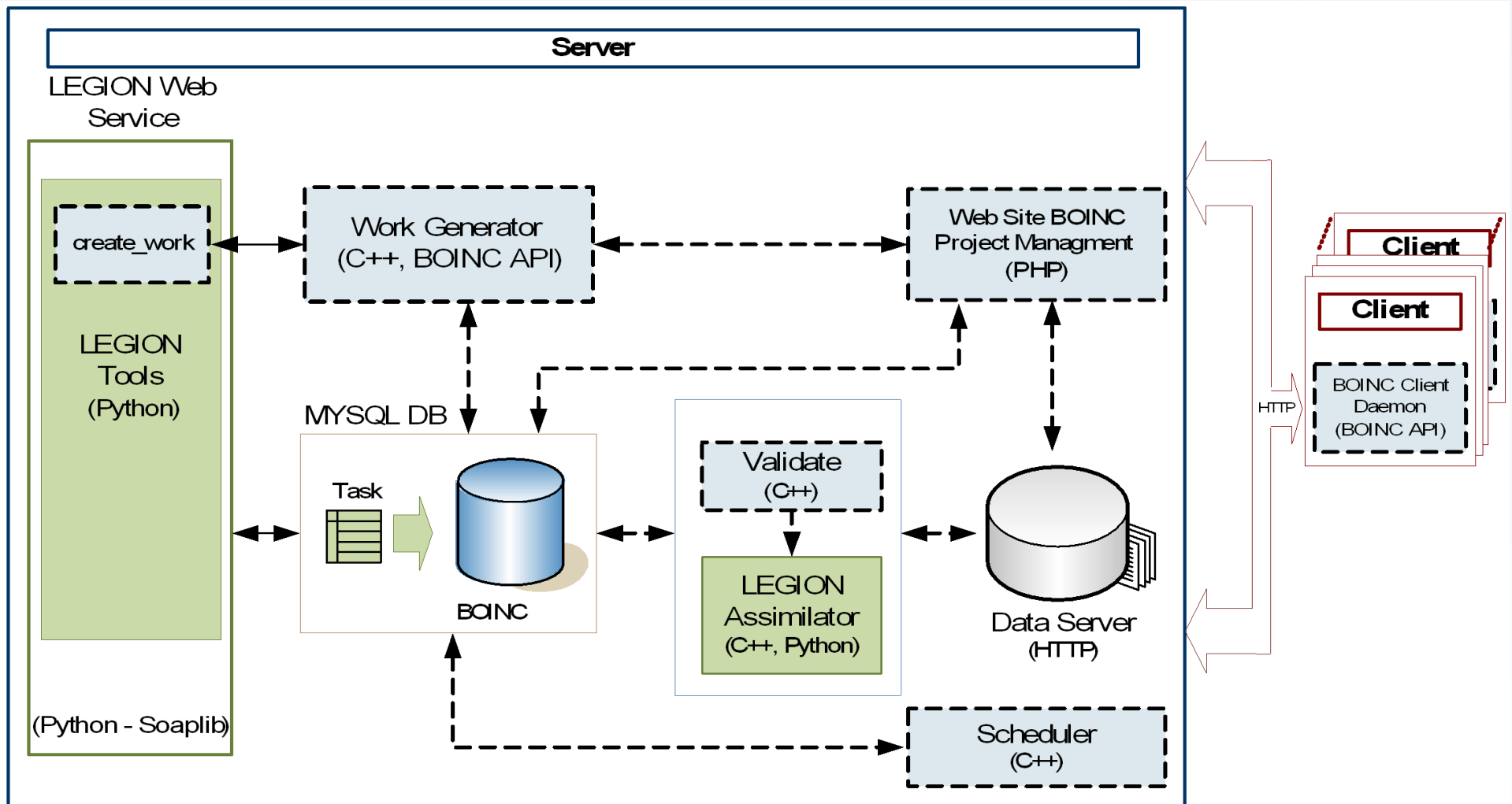


Legion Web Services II

- Legion Web Services is an specification and should be built a custom layer for BOINC.
 - Task Creation.
 - Task Info.
 - Task Cancellation.
 - Task List.
 - User Validation.



Legion Web Services: BOINC



Applications



Remote job submission - Web

- Project = Group of users + Application.
- Collaborative environment.
- Administrative features.



Remote job submission-Web II





Home > Project Integrator User:

Tasks for project Integrator

All New | Delete

Sent	Finished	Name	Progress	PCs	CPU Time	Share	Result	
2011-07-07 15:58:16	2053-01-10 12:56:56	test100 by Pablo Fonseca	100%	0	0.44			
2011-06-28 10:26:15	2011-06-28 10:37:11	test A4 by Pablo Fonseca	100%	0	0.26			
2011-06-23 18:20:37	2011-06-24 03:22:50	Sin_x_squared_integration	100%	0	0.04			
2011-06-22 17:15:30	2011-06-22 17:25:33	test_refresh_js_4 by Pablo Fonseca	100%	0	0.03			
2011-06-22 16:15:38	2011-06-22 17:18:44	test_shared by Andres Linares	100%	0	0.03			
2011-06-22 14:17:46	2011-06-22 14:21:07	test_java_script by Pablo Fonseca	100%	0	0.03			
2011-06-16 11:47:40	2011-06-16 12:02:41	test	100%	0	0			

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Remote job submission-Web III

The screenshot displays the Legion Form Editor interface. At the top left is the 'Legión' logo, and at the top right is the logo for 'PONTIFICIA UNIVERSIDAD CATOLICA DEL PERU'. The main area is titled 'Legion Form Editor' and contains a table of form elements:

Form Element	Configuration	Actions
txtFx - TextBox	Integral parameters	▲ ▼ Edit X
txtStart - TextBox	Integral parameters	▲ ▼ Edit X
txtStop - TextBox	Integral parameters	▲ ▼ Edit X
txtStep - TextBox	Integral parameters	▲ ▼ Edit X
txtPrecision - TextBox	Precision	▲ ▼ Edit X



Below the table are several control buttons: 'Setup Sections', 'Add' (with a 'TextBox' dropdown), 'Clear All', 'Edit XML', 'OK', and 'Cancel'. A 'TextBox Editor' dialog box is open in the foreground, showing the configuration for the 'txtFx' element:


- HTML ID*: txtFx
- Label*: f(x)
- Message: Function to integrate
- Default: (empty field)
- Validation: No validation (dropdown) with an 'Edit' button

At the bottom of the dialog are 'Cancel' and 'OK' buttons. The background interface also shows a sidebar with navigation links (Home, Profile, Users, Projects, Tasks, Logout) and a status bar at the bottom with contact information for the Pontificia Universidad Católica del Perú.



Remote job submission-Web IV





Home > Projects > Integrator > New User: Admin Admin

Task submission for Integrator

Basic Parameters

Name

Description

Integral parameters

f(x)
Function to integrate

Lower Limit
Must be an integer

Upper Limit
Must be an integer

Step
Must be an integer

Precision

Home
Profile
Users
Projects
Tasks
Logout

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Remote job submission - CLI I

- Submitting and monitoring tasks from command line.

Java:

- `java -jar LWS-Client.jar user email password http://server:port/?wsdl`

PHP:

- `php Main.php user email password http://server:port/?wsdl`



Remote job submission - CLI II

```
Archivo  Editar  Ver  Buscar  Terminal  Ayuda
*****MENU MAIN*****
Choose an option:
( 1 ) : User validate
( 2 ) : List
( 3 ) : Create
( 4 ) : Information
( 9 ) : Exit
> 4
*****MENU Information*****

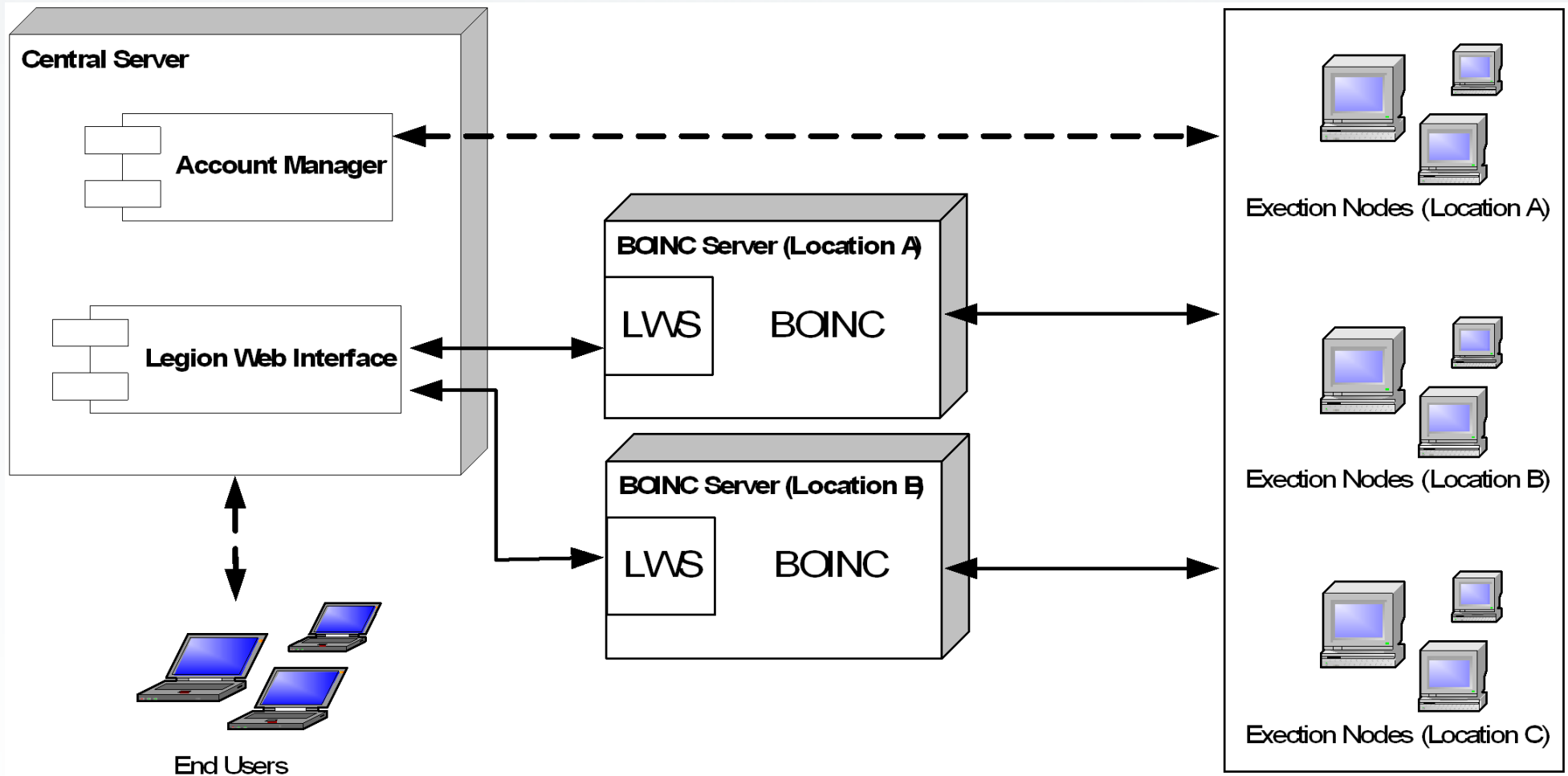
Task ID : 1608763313

Task ID : 1608763313
Description : Task completed
Computers : 0
Task N : 2
Task Finish : 2
Cpu time (sec) : 0.0
Elapsed time (sec) : 4.033224
Real time (sec) : 69.03802
Link Result : /65c6b29edb386b98db16804753a32868/test.zip
```



Centralized BOINC Server Supervision

- Architecture proposal.



Conclusions and future work



Future work

- Deploying Legion Framework in Latin America.
- Integration with other systems.



Legion Framework Benefits

- Modular Architecture / Code.
- Open source - Licensed under the GPL.
- Online documentation on our wiki.

Thank you.

More info:

<http://legion.pucp.edu.pe/wiki>

or drop us an email:

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